



Steamboat Buckwheat

'A special Nevada plant'

Steamboat buckwheat (*Eriogonum ovalifolium* var. *williamsiae*), is a uniquely beautiful plant found in the Steamboat Hot Springs area of southern Washoe County, Nevada. It has not been found on any other hot spring areas in the Western United States despite extensive surveys. A habitat area of approximately 150 acres, comprised of both private and public lands, is the only known location of Steamboat buckwheat in the world. Land uses within the plant's habitat include the US 395 corridor and SB Geo, Inc., a geothermal operating company.

Steamboat buckwheat was placed on the Nevada list of Critically Endangered Native Flora in 1982, which provides for the conservation, protection, restoration and propagation of selected species of flora and for the perpetuation of habitats of such species. It was also listed as endangered in 1986 under the federal Endangered Species Act. SB Geo, Inc. has been proactive in the protection of the buckwheat habitat while continuing to develop the Steamboat Springs geothermal resource for electrical power production.

PLANT ECOLOGY

Steamboat buckwheat grows as low, compact woody perennial mounds up to 18 inches across, covered with rosettes of small, greenish-gray leaves. The leaf blades are nearly circular, up to 0.5 inch long and 0.4 inch wide, and covered with dense, white hairs. From May through July, numerous leafless flowering stems 3-10 inches high grow from the leafy mound, each producing a single tight ball, or head, of white to pinkish flowers at its tip (the flowers age to brown later in the season). Each of the many tiny (up to 0.16 inch long) flowers consists of 6 parts, the outer 3 are nearly circular, the inner 3 are much narrower. Nine stamens with pink anthers (pollen-producing organs) protrude from each flower, giving the entire head a fuzzy appearance. The above combination of features distinguishes Steamboat buckwheat from all other species.

The reproductive biology of the species is not well understood. Seed germination may be less than one percent, although each plant may produce hundreds of seeds. New plants grow from seeds and may also grow from roots of existing plants. Butterflies have been observed visiting the flowers, and successful seed set has also been reported under nursery conditions in the absence of pollinators.

Steamboat buckwheat grows naturally in young, shallow, poorly-developed soils derived from siliceous sinter materials deposited by past thermal spring flows. These soils range from highly acidic to moderately alkaline, with variable levels of soluble salts. In the most acidic soils, another rare and sensitive species, altered andesite buckwheat (*Eriogonum robustum*) also occurs. Steamboat buckwheat does not tolerate competition from native vegetation found on deeper, better-developed soils adjacent to its habitat. When competitive vegetation is absent, Steamboat buckwheat will grow temporarily on other soils.

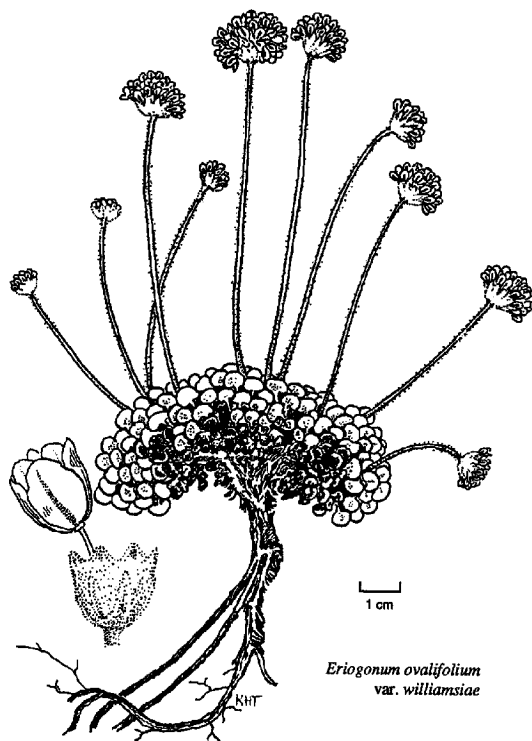


Illustration reproduced with the permission
of Kaye H. Thorne.

CONSERVATION ISSUES

- Habitat deterioration due to elimination of spring flows most likely from the combined effects of drought and regional ground water draw-down.
- Only one known location in the world.
- Unique soil and habitat requirements.
- Potential for development on private lands.
- Noxious weed encroachment.
- Steamboat Ditch breaches periodically, increasing soil erosion.

HISTORY of the SPECIES and its HABITAT

- 1884 First Steamboat Buckwheat collected by Katherine Brandegee, a San Francisco botanist raised in Virginia City.
- 1887 Mercury and sulfur were mined nearby by the Nevada Quicksilver Company.
- 1981 Formally described in the scientific literature as *Eriogonum ovalifolium* var. *williamsiae*, named in honor of Margaret Jensen Williams (1917-2000), founding member of the Northern Nevada Native Plant Society.
- 1982 Species listed as Critically Endangered by the Nevada Division of Forestry.
- 1986 Listed as an endangered species by the U.S. Fish and Wildlife Service under the Endangered Species Act.
- 1987 Surface flows from Steamboat Hot Springs ceased.
- 1991 A geothermal power plant was constructed within the habitat by Steamboat Development Corporation who performed extensive monitoring and mitigation activities, including transplantation, to minimize impacts.
- 1992-3 A collection of seed was endowed for long-term storage at the Berry Botanic Garden in Portland, Oregon.
- 1993 The Nature Conservancy and SB Geo, Inc., developed a joint management plan for the species.
- 1995 Recovery plan finalized by the U.S. Fish and Wildlife Service.

REGULATIONS/PERMITTING

A plant species is considered endangered not just because it is rare, but because it is in danger of extinction throughout all or a significant portion of its range.

Steamboat buckwheat was declared to be threatened with extinction by the Nevada State Forester in 1982. No plants may be removed or habitat destroyed at any time by any means except under special permit issued by the Nevada State Forester (Nevada Revised Statutes (NRS) 527.260 to 527.300). All activities (e.g. construction, development, maintenance, motor vehicle operation, etc.) conducted by a person, landowner or manager on or beneath the surface of land that would, or has the potential to negatively impact the Steamboat buckwheat and/or its habitat, must be permitted, as required by NRS 527.270, prior to initiating any activity.

Steamboat buckwheat was listed as endangered in 1986 under the federal Endangered Species Act (ESA). The ESA prohibits destruction of listed plants on Federal land, but provides little substantive protection on private lands unless the property is subject to a federally administered, authorized, or funded activity that might adversely affect the species. However, any knowing violation of state law or regulation is grounds for the U.S. Fish and Wildlife Service to take jurisdiction. The ESA requires all Federal agencies to assist in the recovery of listed plants and wildlife, and prohibits them from jeopardizing the continued existence of listed species by any action they authorize or fund. The ultimate goal of the ESA is the recovery of these species leading to their eventual removal from the endangered species list.

Steamboat buckwheat forms compact woody mounds covered with rosettes of leaves.



Jim Morefield, Nevada Natural Heritage Program

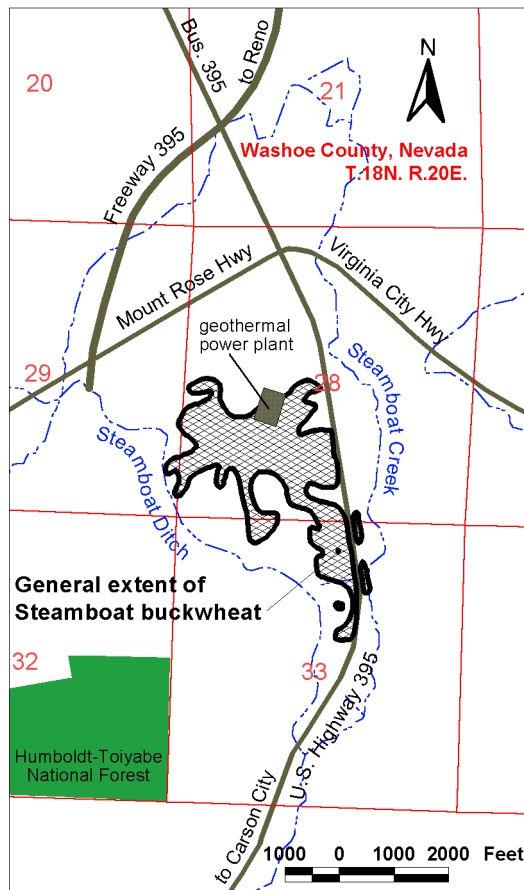


GEOHERMAL OPERATIONS

Steamboat II & III Geothermal Power Plants commenced commercial operation in December 1992. Together, the power plants produce 40 megawatts of electricity. The energy produced is sold to Sierra Pacific Power Co. and maintains a supply of electricity to approximately 30,000 homes. Unlike traditional power plants that use oil, coal and natural gas, geothermal energy is completely renewable and produces no atmospheric emissions.

The closed-loop binary power plants at Steamboat work by taking 325°F geothermal water from the earth and passing it through a series of heat exchangers where the energy is used to heat a working fluid to a superheated vapor that turns the turbine. The hot water is then re-injected into the earth to be re-heated and used again. The superheated vapor is cooled by air-condensers to a liquid form and re-circulated through the system.

The Steamboat Geothermal Field is considered one of the world's most consistent and dependable sources of geothermal energy which allows the power plant to be online 99 percent of the time. Steamboat II & III are owned by Steamboat Development Corp. and operated by SB Geo, Inc.



WHAT YOU CAN DO

- Join “Weed Warriors” to help keep noxious weeds out of the buckwheat habitat. For information call University of Nevada Cooperative Extension at (775) 784-4848.
- Join the Northern Nevada Native Plant Society, P.O. Box 8965, Reno 89507-8965, to learn more about native plants.
- Educate friends, neighbors, and officials about the sensitivity of the site, encourage them to respect no trespassing signs, and support continued conservation efforts.
- Encourage and support Washoe County Parks to develop an interpretive center.

RESOURCES and COOPERATORS

Nevada Division of Forestry, (775) 684-2500

<http://www.state.nv.us/cnr/forestry>

U.S. Fish & Wildlife Service, (775) 861-6300

<http://www.fws-nctc.org>

<http://endangered.fws.gov>

Nevada Natural Heritage Program,
(775) 687-4245

<http://www.state.nv.us/nvnhp>

University of Nevada Cooperative Extension,
(775) 784-4848

<http://www.extension.unr.edu>

Northern Nevada Native Plant Society

<http://www.state.nv.us/nvnhp/nnnps.htm>

SB Geo, Inc., (775) 852-1444 Extension 21

<http://home.nvbell.net/sbgeo/steamboat.html>

Bureau of Land Management, (775) 861-6400

<http://www.nv.blm.gov>

The Nature Conservancy of Nevada,

(702) 737-8744 (Las Vegas)

(775) 322-4990 (Reno)

<http://www.tnc.org/nevada>

Washoe County Parks, (775) 828-6642, or

(775) 785-4153

<http://www.maycenter.com>

This brochure was developed through a grant to the Nevada Division of Forestry from the United States Department of Interior, Fish and Wildlife Service, with assistance from the above cooperators.

For more information contact:
The Nevada Division of Forestry
1201 Johnson Street, Suite D
Carson City Nevada, 89706-3048
Phone (775) 684-2500